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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,235	05/14/2001	John C. Hall	PD-990135/11508	9032

7590 08/04/2003  
Gregory Garmong  
P.O. Box 12460  
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EXAMINER

CHANEY, CAROL DIANE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-9

**Office Action Summary**

Application No.

09/855,235

Applicant(s)

HALL ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

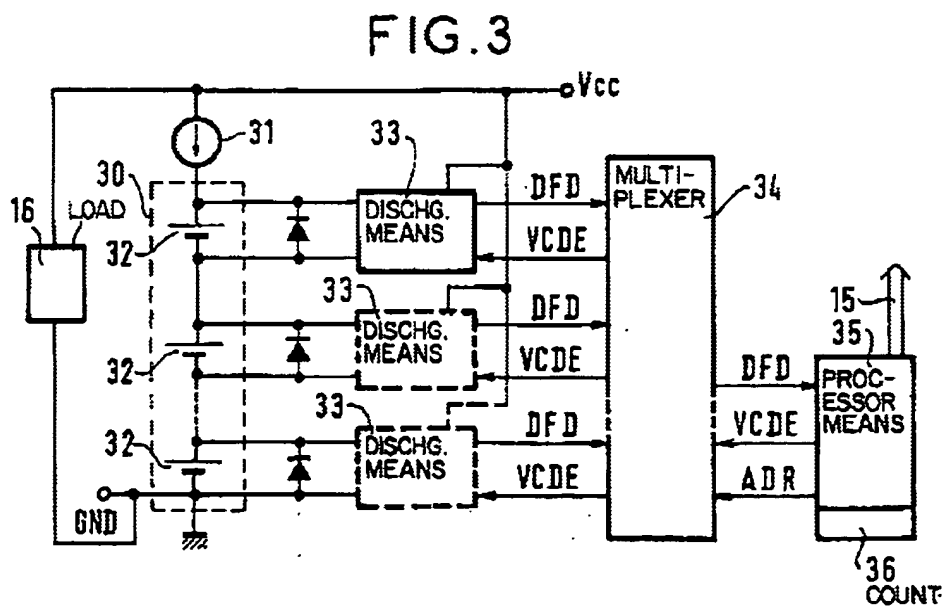
- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

**Claim Rejections - 35 USC § 103**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-6, 8, 9, and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrieu et al., US Patent 5,543,245 in view of Kawano et al., US Patent 6,193,946.

Andrieu et al. disclose a system for monitoring a plurality of battery cells. As seen in Fig. 3, each battery cell 32 includes a diode connected between the anode and cathode of that cell. The diodes can be Schottky type diodes. (column 6, lines 2-3.) The battery cells 32 can be lithium carbon batteries. (Column 2, lines 48-51.)



The disclosure of Andrieu et al. differs from applicants claims in that Andrieu et al. do not describe details of the battery cathode active elements, the electrolyte, or current collectors. Kawano et al. disclose spirally wound lithium non-aqueous batteries (Fig. 1 and column 6, lines 51-61.) The cathode active materials are lithium composite oxides, and  $\text{LiNi}_{1-x-y}\text{Co}_x\text{Al}_y\text{O}_2$  is a preferable material. (Column 4, lines 7-10.) A preferred anode material is graphite. (Column 5, lines 55-57.) A preferred anode contains a copper current collector, and a preferred cathode contains an aluminum current collector. (Column 7, lines 7-22.) Preferred electrolytes contain a lithium salt and organic carbonate solvents. (Column 7, lines 33-36.) Kawano et al. teach that their inventive battery has a high energy density, various superior characteristics, and a high safety level. (column 5, lines 49-57.) Therefore, it would have been obvious to one of ordinary skill in the art to use the battery cells disclosed by Kawano et al. in the system disclosed by Andrieu et al. in order to have a system with high energy density and high safety.

Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrieu et al. in view of Kawano et al. as applied to claim 1 above, and further in view of Okada et al., US Patent 6,027,836. Andrieu et al. in combination with Kawano et al. disclose applicants' invention essentially as claimed, with the exception that neither Kawano et al. nor Andrieu et al. disclose a microporous polyvinylidene fluoride (PVDF) separator and do not disclose prismatic batteries. Okada et al. teach prismatic lithium ion batteries having microporous PVDF separators. (Column 5, lines 44-49.) The

prismatic microporous PVDF separators are shown to have superior discharge capacity compared with batteries having conventional polyolefin separators. (Column 6, lines 20-29.) Therefore, it would have been obvious to one of ordinary skill in the art to use the microporous PVDF separator disclosed by Okada et al. in the battery disclosed by Kawano et al. in order to improve discharge capacity. It would have been obvious to one of ordinary skill in the art to form a battery having a microporous PVDF separator as a prismatic battery because this is the battery shape taught by Okada et al. for use with the microporous PVDF separators.

Claims 1, 2, 3, 5, 6, 8, 9, 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrieu et al. in view of Maeda et al., US Patent 6,428,930. As discussed above, Andrieu et al. disclose a system for monitoring a plurality of battery cells (32) which include diodes connected between the anode and cathode of each cell. The diodes can be Schottky type diodes. (See Andrieu et al., column 6, lines 2-3.) The battery cells 32 can be lithium carbon batteries. (Column 2, lines 48-51.)

The disclosure of Andrieu et al. differs from applicants claims in that Andrieu et al. do not describe details of the battery cathode active elements, the electrolyte, or current collectors. Maeda et al. disclose spirally-wound lithium secondary batteries which include an anode of carbon active material pasted on a copper current collector and a cathode having a mixture of lithium metal oxides with an aluminum current collector. (See Maeda et al., column 5, lines 7-38.) In a specific embodiment, the cathode active material is a mixture of  $\text{LiNiO}_2$  and  $\text{LiCo}_{0.5}\text{Ni}_{0.5}\text{O}_2$ . (See Maeda et al.,


column 7, line 9.) The electrolyte is a lithium salt dissolved in a mixture of organic carbonates. (See Maeda et al., column 5, lines 40-45.) Maeda et al. teach that their inventive batteries can suppress temperature rises in the batteries during charge and discharge, and therefore, the cycle life of the batteries can be improved. Therefore, it would have been obvious to one of ordinary skill in the art to use the batteries disclosed by Maeda et al. in the battery system disclosed by Andrieu et al. in order to improve the cycle life of batteries in the Andrieu et al. invention.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Carol Chaney  
Primary Examiner  
Art Unit 1745

cc  
July 30, 2003